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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,994	06/29/2006	Masaaki Bairo	SON-3173	5930
23353 7590 02/22/2008 RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036				
EXAMINER				
KUO, WENSING W				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/584,994

**Applicant(s)**

BAIRO, MASA AKI

**Examiner**

W. Wendy Kuo

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-8 have been canceled. Claims 9-15 are pending.

### *Claim Objections*

2. Claim 9 is objected to because of the following informalities: "said emitter electrode lead opening" (claim 9, line 10) does not have proper antecedent basis; for the remainder of this Office action, claim 9, lines 9-10 will be interpreted as follows:

"forming base and *emitter* electrode lead openings within said insulating film, said base electrode lead opening being formed simultaneous with said emitter electrode lead opening"

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

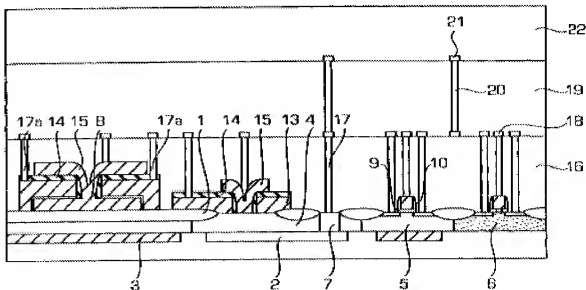
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii (US 6,307,227) (hereinafter Fujii) in view of Hozumi (US 5,013,677) (hereinafter Hozumi), and further in view of Morimoto (US 6,885,081) (hereinafter Morimoto).**

5. With respect to claim 9, Fujii (e.g. Figure 10) teaches a method for manufacturing a bipolar transistor, the method comprising the steps of:

- Forming a base layer 13 on an insulator 1, said base layer being in contact with a portion of a semiconductor substrate (2, 4; 30 Figure 3);
- Forming an insulating film 16 on said base layer 13;
- Forming base and emitter electrode lead openings within said insulating film 16 (column 8, lines 27-30);
- Depositing a conducting film (polysilicon) into said base electrode lead opening and into said emitter electrode lead opening, said conducting film within said base electrode lead opening being a base electrode lead portion and said conducting film within said emitter electrode lead opening being an emitter electrode lead portion (column 8, lines 27-30)

FIG. 10



Fujii fails to teach that the base electrode lead opening is formed simultaneous with the emitter electrode lead opening. Fujii further fails to teach a step of polishing the conducting film to separate the base electrode lead portion from the emitter electrode lead portion. Hozumi teaches that the base electrode lead opening is formed simultaneous with the emitter electrode lead opening (column 6, lines 57-61) in order to realize the simultaneous production of a transistor and other elements with a simplified process of manufacture (column 7, lines 67-68; column 8, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fujii with the step of simultaneously forming the base and electrode lead openings as taught by Hozumi for the benefit of realizing the simultaneous production of a transistor and other elements with a simplified process of manufacture.

Fujii as modified by Hozumi further fails to teach a step of polishing the conducting film to separate the base electrode lead portion from the emitter electrode lead portion. Morimoto teaches a step of polishing a conducting film to separate electrode lead portions in order to form individual plugs in via holes (column 6, lines 17-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fujii as modified by Hozumi with the polishing step of Morimoto for the benefit of forming individual plugs in via holes.

6. With respect to claims 10-13, Fujii as modified by Hozumi and Morimoto remains as applied to claim 9 above.

7. With respect to claim 10, Fujii (e.g. Figure 10) teaches that said insulator 1 is on said semiconductor substrate (2, 4; 30 Figure 3) with an opening within said insulator exposing said portion of the semiconductor substrate.
8. With respect to claim 11, Fujii teaches that the base layer 13 is a semiconductor material (column 4, line 37).
9. With respect to claim 12, Hozumi (e.g. Figure 2C) teaches that the conducting film 11 is deposited simultaneously into said base and emitter electrode lead openings (column 5, lines 31-35).
10. With respect to claim 13, Hozumi (e.g. Figure 2H) teaches the step of diffusing a dopant 16e from said emitter electrode lead portion into said base layer 7 to form an emitter region with said base layer.
- 11. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii as modified by Hozumi and Morimoto as applied to claim 9 above, and further in view of Besser et al. (US 2003/0235984) (hereinafter Besser).**
12. With respect to claim 14, Fujii as modified by Hozumi and Morimoto teaches all of the limitations of claim 9 above.

Fujii as modified by Hozumi and Morimoto fails to teach a step of depositing a silicide onto a polished surface of said conducting film (\*however, note that Fujii teaches the step of depositing aluminum on the surface of the conducting film; column 8, lines 39-40). Besser teaches that it is advantageous to use silicide instead of aluminum in order to provide contacts that are reliable, thermally stable, and have lower resistivity [0003].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fujii with the silicide of Besser for the benefit of providing contacts that are reliable, thermally stable, and have lower resistivity.

13. With respect to claim 15, Fujii (e.g. Figure 10) teaches a step of depositing an interlayer insulator 19 onto said silicide and said insulating film.

### ***Response to Arguments***

14. Applicant's arguments with respect to claims 9-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Wendy Kuo whose telephone number is (571)270-1859. The examiner can normally be reached Monday through Friday 7:00 AM to 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue A. Purvis can be reached at (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 2826

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